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ART OF
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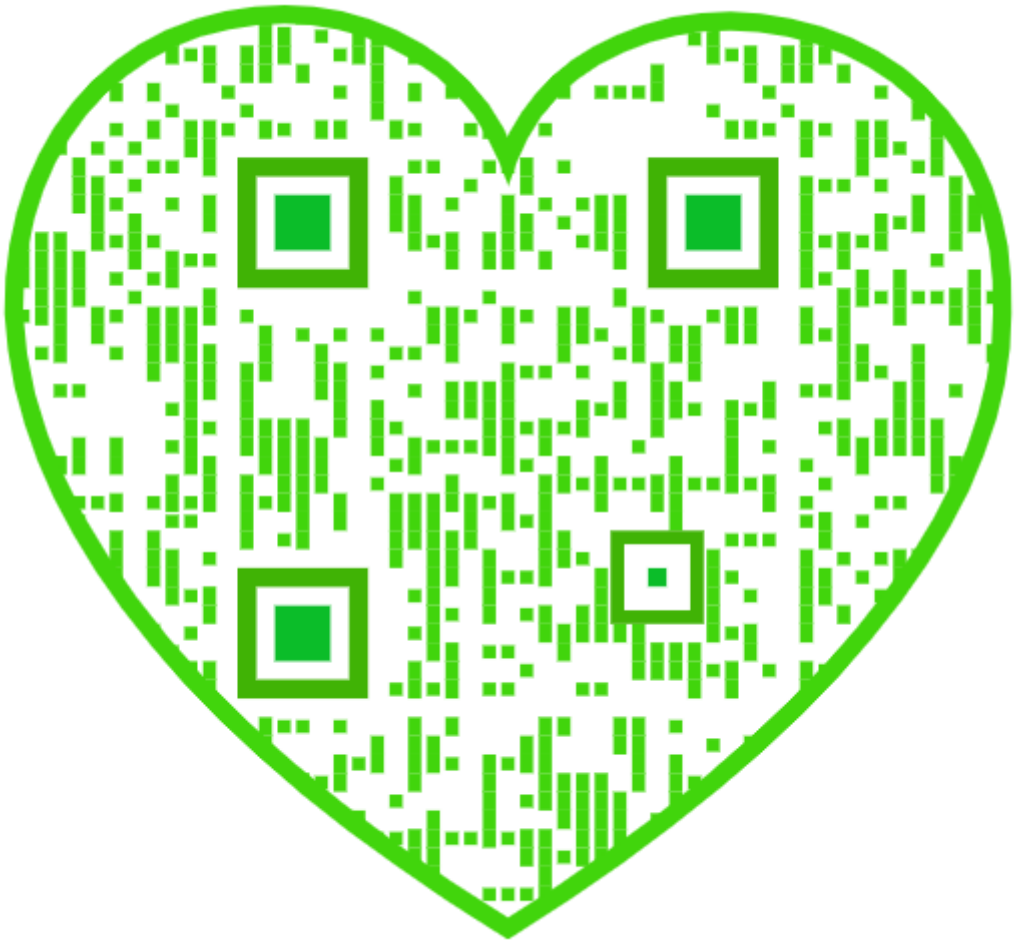

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A MANUAL OF INSTRUCTION

IN THE

ART OF WOOD ENGRAVING.

WITH A

DESCRIPTION OF THE NECESSARY TOOLS AND APPARATUS, AND CONCISE DIRECTIONS FOR THEIR USE; EXPLANATION OF THE TERMS USED, AND THE METHODS EMPLOYED FOR PRODUCING THE VARIOUS CLASSES OF WOOD ENGRAVINGS.

By S. E. FULLER.

WITH ILLUSTRATIONS BY THE AUTHOR.

BOSTON:
PUBLISHED BY JOSEPH WATSON.
1867.

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PREFACE.

ALTHOUGH illustrations upon wood are numerous nowadays, there are few persons who understand any thing of the method of their production.

They have become a blessing so common, that, like the types they usually accompany, they arrest attention only till the thoughts they convey are received; few persons examining the manner of their execution, or being aware that all the numerous lines that make up a picture have each been wrought carefully and separately, line after line, patiently, by the dexterous hand; and only in a few instances are pictures made by any kind of machine.

Only few books have been written upon the art of Wood Engraving, and these are chiefly relating to the history of the art. Upon examination, not one was found that gave directions for the practice of the art, so that a novice might learn to engrave without an instructor.

To supply this want, this little manual has been prepared. It has aimed to give the necessary instruction in as concise and simple form as possible; and the author believes that any person of intelligence, by following the directions, will be able to produce excellent wood cuts; that is, by giving the necessary practice. And, although the pages of this little book are few in number, the instructions are comprehensive.

With the hope that the little book may incite attention and love for the art of Wood Engraving, that it may meet many to whom its teachings will be valuable, it is sent forth on its way.

. . . . . .

It is often said that engraving is a fine employment for woman, that it is just adapted to her, and the hope expressed that woman will enter largely upon this field of labor upon which she has begun to explore the suburbs.

Because it is a sedentary occupation, because it is light manual labor, and because woman needs new avenues of employment, are the grounds for the belief of the adaptability of Wood Engraving to woman's

capacity, and her fitness for its pursuit. Not these the true reasons why. It *is* adapted to woman; but she cannot learn the art in a three, six, or twelve month's tutilage, which would be sufficient for graduation in millinery, mantua-making, tailoring, or other trades for women. She must understand that it requires patient and persevering study and thought, such as her usual avocations seldom require. And she will meet with all the discouragements and difficulties that are incident to, and experienced in, every department of art; but if she faints not, if she studies, if she perseveres, great is the reward to her soul. All her powers become quickened and enlarged. The world has become richer within a few years by a few women having commenced the pursuit of Wood Engraving. [Of course, all other departments of art are alike ennobling, if pursued with a true love for art, both for itself and its elevating influence upon the world.]

Another point requires consideration. With the present physical power of woman, she ought not to apply herself as many hours as she could give to other pursuits, nor as many hours as men. Men in good health can usually engrave eight or nine hours every day, without being severely taxed. A woman ought not to engrave more than five or six hours, and during the hours of interval she should *recreate* as much as possible. While she is resting from actual labor, she may still make progress by examination of all fine works of art, and observation of Nature's countless effects.

In a pecuniary point of view, the profession is not become overcrowded; the prices as yet for the same quality of work being the same, whether executed by a man or woman; and a skilful engraver can usually earn much more money than in most of the feminine employments.

Let, then, women of ability and industry consider the propriety of entering upon the pursuit of the art of Wood Engraving, "and let her own works praise her in the gates."

WOOD ENGRAVING.

CHAPTER I.

In its most comprehensive sense, the term "wood engraving" implies all ornamental cutting or engraving on wood, but is usually limited to such as is used for printing, and does not include raised figures, or carving in relief. Any type cut in wood, from which may be made printed impressions, is called a wood engraving, or wood-cut. The term wood-cut is applied to prints made from wood; while those made from steel and copper are called plates; and those from stone, lithographs. Without any further knowledge of the manner in which these different kinds of engravings are produced, the observer may recognize wood-cuts by their being printed on the same page with type; whereas plates and lithographs cannot be so printed, but occupy separate sheets.

The art of engraving on wood is of very great antiquity. It was practised by the early Egyptians, and by Europeans from a date prior to the Christian era, but in a crude and simple manner. In the fifteenth century, it was applied, not to the representation of figures only, but also to the production of the explanatory text on the same

block, and later still to entire pages of text; thus foreshadowing the printing with types, in which these early attempts soon after culminated.

In the latter part of the fifteenth century arose Albert Durer, who contributed more than any previous individual to the progress of the art. It has been generally believed that he himself engraved upon wood; though by some it is questioned whether he did more than furnish designs.

Within a century after, wood engraving attained a high degree of excellence, yet, strange as it may appear, within the seventeenth century declined to a very low ebb. In the latter part of the eighteenth century, Thomas Bewick carried it far nearer perfection than it had ever been. The art was introduced into America by Dr. Alexander Anderson. Indeed, he may be called the inventor of the art in this country; for, although he was familiar with illustrations, the manner of producing them was suggested by his own ingenuity and perseverance. From his earliest years, he evinced a love of art; and at the age of twelve he commenced engraving. His first attempts were made upon copper cents, rolled into plates. He learned the method of using the gravers by looking in at the windows, and watching the silversmiths at their work. He improved every opportunity, and at the age of seventeen was employed by William Durell, a bookseller, to copy the illustrations of a popular little work called "The Looking-glass." These illustrations were made by Bewick. Anderson commenced making these illustrations upon type metal; but, when about half completed, he

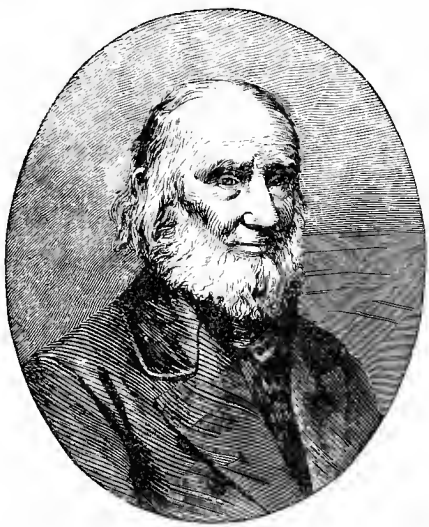
learned that the originals were engraved on wood. He immediately procured some wood, and found that it was much more pleasant to engrave than type metal.

He studied medicine, and graduated, at the age of twenty-one, from the medical department of Columbia College. He practised medicine for a short time, but it did not prove a congenial profession; and his love of art was so irrepressible, that he decided to devote himself to the pursuit of engraving.

Till the year 1820, he used copper and wood as occasion required; but, since then, he has engraved exclusively on wood. He has engraved many thousands of subjects during his long and busy life. From the latter part of the last century, down to the present time, his illustrations have embellished works which are familiar to all. Throughout his long career, he has maintained the same earnestness and enthusiasm for the art as when he commenced. He believes that an engraver should have a love of engraving, and not use the art merely as a means for obtaining money.

Dr. Anderson was born in New York, near Beekman's Slip, April 21, 1775, and is consequently now (1866) in his ninetieth year. He is very regular and temperate in his habits, genial and interesting in conversation, and unaffectedly modest and retiring. He will not allow that he has any peculiar talent or excellence, only that he has been *industrious*. He still plies the graver. The portrait of himself, which we here present, he engraved last year. It was by urgent solicitation that he consented to do this for the private use of a friend, who has kindly permitted

its use in this work. The author hopes that its presence here may prove an incentive to all to pursue the art in the spirit and with the earnestness displayed by the father of American wood engraving.



Next to Dr. Anderson, American art is indebted to J. A. Adams and J. H. Hall, who contributed to carry it to a high degree of perfection. Contemporary with Dr. Anderson and each other, for a number of years these three were accorded equal fame as the best engravers in America. Mr. Adams and Mr. Hall were also self-taught men. They studied the works of Dr. Anderson, and of Bewick, his exemplar. They both possessed much delicacy and finish in their rendering of their subjects. Mr. Adams is living still; but he laid aside his graver some

years ago. Mr. Hall made many improvements in tools and apparatus used in engraving. The process of transferring now in use was invented by him. From the impulse given by these three pioneers, the art has advanced rapidly in this country, keeping pace with the art in Europe.

As an auxiliary to science, no sister art has achieved so much. Who that has been delighted with Bewick's animals and birds, and such later works as those of Thomas Rhymer Jones, P. H. Gosse, and Mr. Sowerby, does not bless the unknown originator of an art which brings to our humblest firesides these exquisite illustrations of every imaginary and actual subject?

CHAPTER II.

For all fine engravings, Turkey boxwood is used. As its quality varies much, some skill is necessary to a good selection. That which is best is of a delicate yellow color, clear, and free from spots. This wood cuts smoothly and evenly. There will be no crumbling out of little particles, nor tearing of the wood; but every line cut will be perfect.

The wood must be sawed across the grain, so that the cut can be made on the end of the fibre. In most cities, there are dealers whose business it is to prepare and furnish wood to engravers; and they usually sell it in blocks as thick as the height of printers' type, that the engraving may be printed at the same time with the reading-matter. One side is planed quite smooth for the engraving.

As the box-tree seldom attains great size, it frequently happens that the diameter is not great enough to furnish a block of sufficient dimensions for the cut required. In such cases, several blocks are joined together by the dealers, so that the joint is not detected. Such joinings, however, are apt to spread apart during the process of printing, if many impressions are taken from the cut; so that, for this and other reasons, it is usual to duplicate the engraving by the stereotype or the electrotype process, and print from such duplicate.

For coarse engravings, other kinds of wood are employed. Maple, apple, pear, mahogany, and sometimes even pine, are brought into requisition for posters, handbills, coarse labels, &c. All wood for engraving must be well seasoned. Under the most favorable circumstances, it will often warp slightly: this may in some cases be remedied by exposing the swollen or convex side to the air, and protecting the shrunken or concave.

The subject to be engraved is placed on wood just as the engraver is to cut it. There are now three methods employed: —

First, Making transfers from prints.

Second, Drawing on wood with pencil and India ink; and, —

Third, Photography has been lately employed, — sometimes by furnishing a print, which may be traced from instead of a sketch; and sometimes the block is prepared with chemicals, so that the picture is printed on it with a negative, or directly photographed on the wood in the camera. A photograph on wood is cut in the same manner as a drawing on wood. To put a picture on wood by this process requires the assistance of a photographer.

To prepare a block for a transfer or a drawing, dampen it, and rub it lightly with a piece of pumice-stone, being sure that the plane side is level and smooth. Use water enough to keep the surface free. When all the little scratches are rubbed out, rinse off the block, and it is ready for use. Care must be taken not to allow the block to absorb much water, which would cause it to warp and split. If the block is to have a drawing made upon it, the

surface is whitened while it is yet damp. The best manner of doing this is to take a white enamelled card, and rub the surface of the block, the dampness of which will cause the enamel to come off the card, and adhere to the block. It is then distributed evenly over the surface by light and dexterous touches with the fingers. The block should be placed on its edge to dry; and it is well to make it an invariable rule to place the block in this position, as variations of the atmosphere suffice to shrink, swell, and warp it, and this position exposes the greater part of its surface equally.

The process of making transfers is as follows: The block is prepared as described above with the pumice-stone and water. Many engravers whiten a block for a transfer the same as for a drawing. The author prefers making transfers without; for the white is apt to loosen from the block, and obscure the lines of the engraving. Transferring fluid is made by adding to the highest proof alcohol caustic potash till a saturated solution is obtained. Keep this in a glass bottle with a glass stopple. Transfers may be made from wood-cuts, plates, and lithographs. Lay the engraving to be transferred on a glass or earthen plate; pour a sufficient quantity of the fluid over the engraving, so that it may be thoroughly wet. Allow it to remain till the ink is softened, which will be not more than a minute or two generally. If the print is very pale or old, more time will be required. When the ink is sufficiently softened, carefully rinse off the fluid by dipping the picture into water. Place the prepared block, still damp (not wet), on the print, and pass them through a

press. It requires much more pressure for making a transfer than for printing.

Drawing on wood is generally pursued separately from engraving on wood. It is an advantage for the engraver to be able to put a drawing on wood; for there are many times when the absence or engagements of the draughtsman may make it necessary. Drawing should be pursued as part of the regular instruction in engraving; for, although the tools and manipulation differ, the engraver will understand how to cut a drawing much better from having a knowledge of drawing. Indeed, drawing should be considered an indispensable part of the education of every person. To put a drawing on wood, a sketch is first made on paper. Cover the sketch with tracing paper, which is very thin and transparent, and fasten it so that it shall not slip. With a soft lead-pencil, kept with a sharp point that the line may be clean, trace carefully all the outlines.

Place the tracing face downward on the whitened block, and fasten it securely. Mucilage may be used for this purpose, or yellow beeswax. With a metal or ivory point, not so sharp that it will cut the paper, or a very hard pencil, retrace the outlines.

When they are all visible on the block, with a very hard and fine quality of lead pencil go over all the outlines.

Draughtsmen generally keep at hand a piece of tracing paper prepared with red chalk. The chalk is scraped on the paper, and rubbed over it. One side only is thus prepared. This prepared paper is placed with the red side toward the block, between it and the tracing.

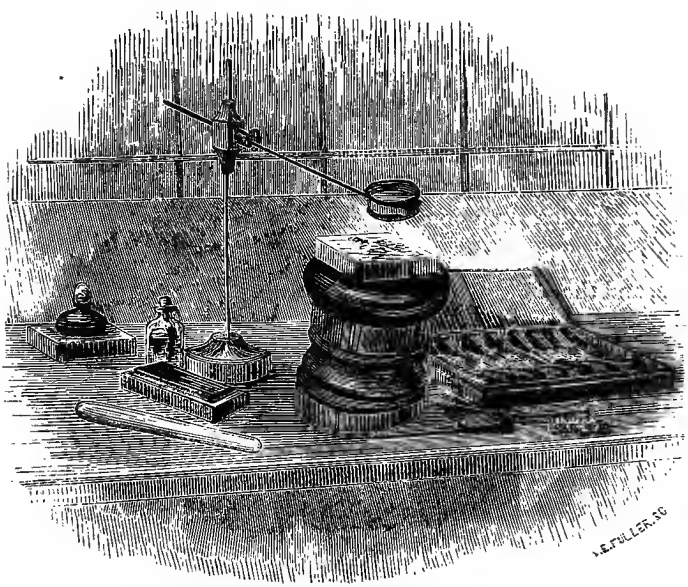
The lines are retraced as described above, and will be found, on the block, red instead of black. This is an advantage; for the traced lines are not always *true* lines, and it is necessary for the draughtsman to place the *correct* line by the side of the traced one. When they are both in pencil, it is frequently difficult for the engraver to determine the true from the false line. If the tracing is in red, no such doubt occurs. When the tracing is completed, with or without the red paper, go over all the outlines with a fine, hard pencil.

With India ink, made pale, wash over the required portions. Repeat the washes till the desired effects are produced.

Pencil such portions as are needed, and put in whatever lines of suggestion to the engraver that are desirable.

CHAPTER III.

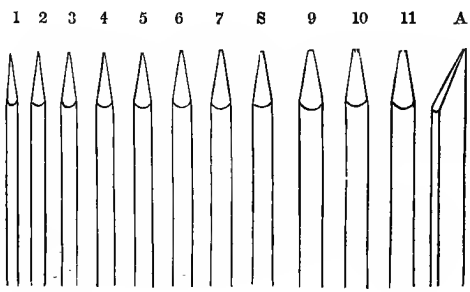
The apparatus necessary for engraving on wood consists of a set of engraving tools, a sand-bag cushion and stand, a magnifying glass, and stand for holding the glass, an oilstone and small leather hone, and an ink slab and dabber.



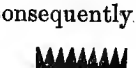
A piece of pumice-stone with one plane side, some bees-wax, a bottle of sweet oil, a soft tooth-brush, an ivory

paper-knife, a box of ink prepared for making proofs, and India proof-paper, are secondarily essential.

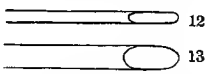
Of the engraving tools, there are four sorts. First, tint-tools, used chiefly in cutting tints: hence their name. Of these from seven to twelve are required, graduated from a very fine tool — so fine that the cut it makes will scarcely be visible when printed — to one which will cut out a line about one-twentieth of an inch wide. The cut exhibits



the graduation from one to eleven. "A" shows the side of a tool. The tint-tools should be straight upon the bottom, and the edges formed by the bottom and sides should be slightly rounded: the tool will cut more smoothly than if sharply angular at the edges. The sides should slant to the top or back, which may be round or square. If the tool is no thicker at the top or back than at the bottom, it will stick, and hang in the wood; and the lines cut will be liable to break down in printing. A section of them will appear like this. When thicker at the back, the lines cut will have more base, consequently more strength. A section appears thus: —

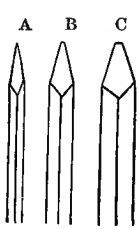


The second class of tools are the gouges, or digging-out tools. Of these, two or three only are necessary; and it



would be well that the smallest gouge should be next larger than the largest tint-tool, and that the largest gouge should be large enough to dig out the largest spaces required. Gouges of the sizes 12 and 13 are usually sufficient; but if the engraver has much work, requiring large spaces to be be taken out, it will be well to add another gouge, considerably larger than No. 13. The gouges are better for being rounded upon the bottom.

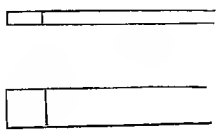
The third class of tools are the gravers, or lozenge-tools. They differ from the tint-tools, in being much thicker at the



back than on the bottom, and shorter on the sides than tint-tools, being nearly square or *lozenge* in shape. This form enables the engraver to vary the width of the lines cut, from a very fine line to one quite coarse. Of the gravers, from two to four will be enough.

The fourth class are the chisels, used chiefly to cut around the edges of pictures, and lower the wood in such

portions as may be necessary. One or two are sufficient. From twelve to twenty tools will form a set sufficient



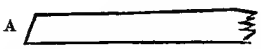
for all ordinary purposes of engraving. Some engravers pride themselves upon doing the greatest variety of work with the smallest number of tools; and others delight themselves with the number and variety of their tools.

For convenience, it is usual to mark the handles of all the tools. The series of tint-tools are numbered 1, 2, 3, 4, 5, 6, &c.: the gouges are also numbered; the smallest gouge being the next number higher than the largest tint-tool. The gravers, or lozenge-tools, are marked A, B, C, &c. The chisels may be marked I. II. The handles of the tools are usually of wood or cork: the shape indicated by the cut is the most convenient for use. The tool

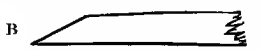
should be inserted into the handle, so that it is nearly straight, the point being inclined slightly downward.

The face of a tool should be kept rather long than short: not too long, however, for then the point will break off in the wood. But, if too obtuse, the tool will rather plough its way through the wood than cut it; and the shaving will also turn over at the point of the tool, and prevent

the engraver from seeing the lines being cut. "A" repre-



sents a tool too obtuse; "B" shows the proper angle of



the face. When of this angle, the tool will cut cleanly and smoothly, and the shaving will not obstruct the sight of the engraver. A small grindstone will aid in grinding to a proper angle the face of the tool when too obtuse. For keeping them sharp while engraving, a good oil-stone is sufficient. It should be fine enough to make the tool smooth while it sharpens; and should "take hold" enough, so that too much time need not be consumed in sharpening tools. Sweet oil is the best for use. Put a few drops upon the stone. Place the face of the tool flat upon the stone, and hold it steadily while rubbing it. It will then have one smooth face, which is right. If it be not held steadily, there will be many little facets, which are very objectionable. A final polish will be given by the use of a leather hone or strap. A golden rule for the engraver to observe is, always to keep the tools well faced, and keenly sharp. If the tools are found too brittle, the defect may be remedied by heating a poker, or other piece of iron, red hot, and laying the tool flat-wise upon it. As soon as it changes to a straw color, it must be removed, and either dipped in sweet oil, or permitted to cool gradually. If it is heated beyond the straw color, passing

into the purple tinge, it will have been heated too much, and will bend, instead of breaking.

It is necessary to have a cushion, or round bag of leather filled with sand, on which to place the block during the process of engraving. It should be filled so full that the block will not sink into it. The cushion may be placed upon a block of wood, or directly upon a table; but engravers generally use a stand made for the purpose, — a turned truncated cone of wood, with the top dished out slightly. This stands firmly, and holds the cushion well. This should be placed upon a firm table or desk, of such height, that, whether the engraver sits or stands, the body will be perfectly erect.

The magnifying glass should be of moderate power. There is much work that can be done without a glass; but to do too fine work without, taxes the eyes too severely, and is detrimental to the quality of the engraving. A glass an inch and a quarter, or an inch and a half in diameter, is the most suitable size. The frame may be of wood, shell, or metal.

An upright stand, with a horizontal arm for holding the glass, is essential. The arm should be movable on the upright, so that the glass may be adjusted at whatever distance from the engraving the focus of the glass may require. Some engravers use the right eye, others the left; some use both eyes; and others use right and left alternately. Every one will soon find which is most convenient.

For an ink-slab, a piece of lithographic stone, or a thick plate of glass, is the best for use.

To make the dabber, take about a double handful of loose wool (cotton is not elastic enough), and tie it up in a circular piece of strong, fine silk, or chamois skin; make it into a flat ball, and tie it so tightly that the silk or skin will not wrinkle on the face of the ball while beating the ink. Wind the surplus silk or skin, so that it will make a handle for the dabber.

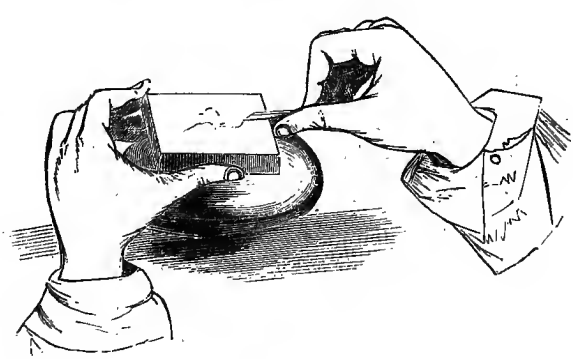
If silk is used, it is better to tie up the wool in a stout piece of cotton, and then cover it with the silk. Be sure that there are no wrinkles, but do not make the face of the ball too hard: it should be slightly elastic.

A soft tooth-brush is used to brush away the small chips cut out by the gravers. It must be soft, so as not to injure the lines of the engraving.

A north light is the best by which to engrave; but, by whatever light the engraver works, there must not be too much nor too little light. The window at which the engraver sits should be so shaded that the light will fall on the block, and not on the eyes of the engraver, — the upper part of the window so that not too much light will enter; and the lower part so as to protect the eyes from the light below, but not so high as to throw a shade upon the block. By carefully attending to the light, the engraver will be able to work with present pleasure, and also preserve the eyesight for future use. Dr. Anderson specially enjoins all young engravers to be careful of their eyes. Sometimes it is well to wear a shade over the eyes.

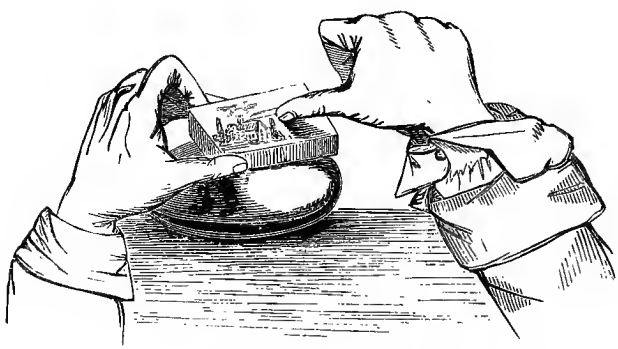
CHAPTER IV.

For a successful pursuit of wood engraving, is required patience, perseverance, and a love of the art. The beginner may or may not use the magnifying glass during the first lessons; but, as some little time is required to gain the use of the tools, it is just as well to make the first trials without the glass, and concentrate all attention upon the handling of the tool and block. Place a block on the cushion, and, with the left hand, hold it firmly to prevent its slipping, but so that it may be readily moved and turned as required while engraving. Hold the handle of



the tool with the second, third, and fourth fingers, and the palm of the right hand grasping firmly, but not rigidly,

using the *forefinger* to *guide* the tool. In cutting all small pictures, the end of the thumb is placed against the side of the block, as is shown in the preceding illustration. In all large cuts, the thumb rests upon the surface of the block, as is shown by this cut.

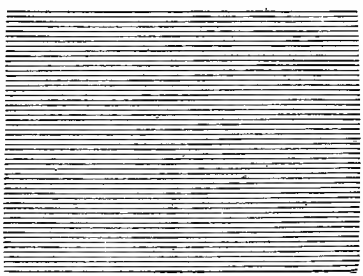


At no time should the tool be pinched between the thumb and forefinger: the thumb is the rest against which the tool moves; and the forefinger always guides, and never holds, the tool.

For the first lessons in engraving, a series of cuts of tints are the best. For the first trial, choose a small piece of box-wood: an inch or so square will answer. Select a tool of medium size for the first trial.

Holding the tool, and adjusting the block as described, commence near the upper edge, and just on the right side; guide the tool with the forefinger, and cut slowly, and not too deeply, a line, as straight as possible, across the block. It is usual to draw lightly, with a pencil, parallel lines, to

serve as guide-lines for cutting; and, for the first line, it would be well to cut in the first pencil line or immediately below it. Keep the same pressure of the tool into the wood throughout the entire length of the line. Having

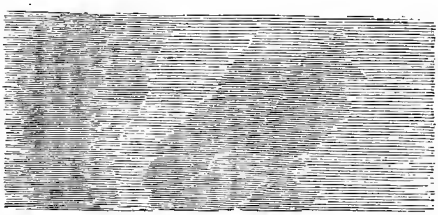


determined the width of the lines of the tint, when commencing the second line, place the tool at the required distance below the line cut, and, cutting into the wood the same depth as before, guide the tool slowly across the block, endeavoring to leave the line as wide throughout its entire length as at the beginning. The lines that are left are the lines that receive ink in printing, and the lines cut out appear white. The quality of plain tint depends upon the evenness of the lines, which make it both black and white; and the color, or tone, depends upon the width of these lines. If possible to cut the second line without either swerving upwards, making the line thinner, or downwards, making it thicker, than at its commencement, and preserving the same pressure of the tool, a great success is attained. But it is hardly probable that the beginner will be thus fortunate; still, by proceeding slowly and carefully, a fair line will have been cut. Commence

every line carefully; observing closely with the *eye* the width of the lines left, and with the *fingers* the depth of the lines cut. Do not think about the time required to cut a line: let each line for the time being be the most important thing in the world, and proceed as carefully as though hundreds of dollars were depending upon its beauty and precision. If, unluckily, the lines get to running up or down, do not continue in the wrong direction. Stop, and take the tool out, and put it farther along in the wood, and, observing its distance from the nearest pencil guide-line, commence again. It is better to have stops in the tint than crooked lines. It will take quite considerable time to get the use of the tools so that it will be possible to cut an even tint; but patience and perseverance will be rewarded with success.

Having cut the first block, place a small quantity of ink upon the slab, and, with the dabber, beat it till it is very fine. Then lightly beat the block, allowing the dabber to remain a few seconds on the block at each beat. Do not rub the dabber over the surface, for that will smear the ink into the lines. By carefully inking a cut, the exact quality of the engraving is exhibited. In this first lesson, the character of the lines is shown very plainly. Some lines, probably, will be found thicker in one portion than in another; some will seem to have lumps upon them; and some will have been cut too thin. It will not be possible to make this piece of tint perfect, but with care it may be much improved. The lines that are too thin must be let alone; they cannot be mended. From the thick and lumpy lines, with a tool several degrees finer than the one

with which the tint was cut, take off a slight shaving, now on the upper and now on the lower side, being careful not to take off too much, and so make the line too thin. When stops occur, turn the block downwards, and, with the same tool with which the tint was cut, re-enter the line, and cut the space of wood left almost through to the end of the line as it stopped. Then, with a fine tool, cut the remainder of the little stop of wood through on each side of the end of the lines, being careful not to make the ends of the lines too fine. When well done, the color of the tint will scarcely be disturbed by the meeting of the

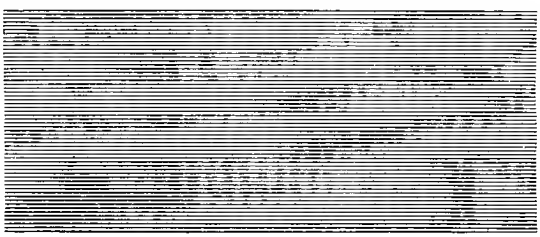


two series of lines; and it is always better to stop, and begin again, than to cut crooked lines.

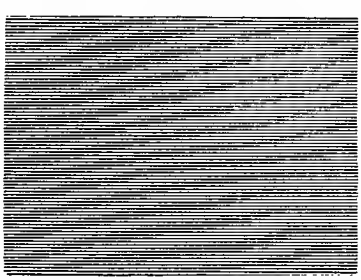
And there will often be occasions when it will be necessary to unite tints, cut with different-sized tools, in this same manner. After trimming the lines of the tint as much as is necessary, ink the block again in the manner described, cut a piece of India proof paper, and lay it carefully upon the block. With an ivory paper-knife, rub gently over the paper, pressing only sufficiently to make the ink adhere to the paper. Rub in the direction the lines are cut. Do this in all cases if possible. Light and delicate lines must be rubbed more gently than heavy

lines; and, in printing, the press should be so adjusted that there will be less pressure upon them than upon the heavy lines. It is advised by the author to preserve proofs of work from the beginning, as they mark the progress of the individual, and they are always useful for reference.

For a second lesson, take a block somewhat larger than the first, and cut some similar tint. Proceed carefully,

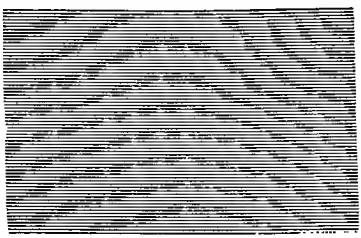


and be in earnest to make straight lines, and do not give up the practice till straight lines and an even tint are produced. The use of different-sized tools will give variety in the tint-studies. Also, with the same tool, cut lines

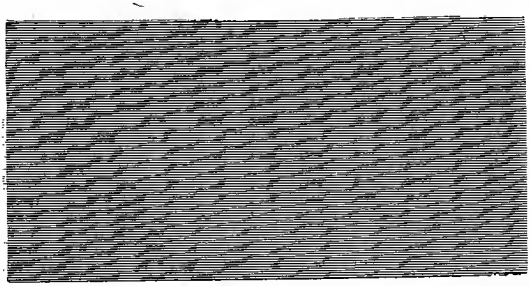


with surface, and those that are sharp. This and the following examples have been both cut with the same tool.

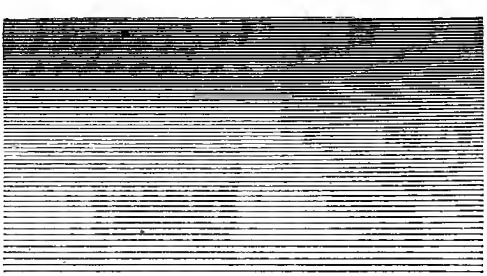
The difference in color is produced by the difference in the width of the lines.



The next example is cut with a finer tool, and has more

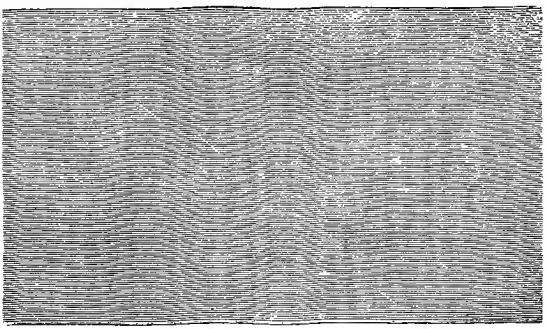


surface, or *face* as it is technically called, than in the previous examples.

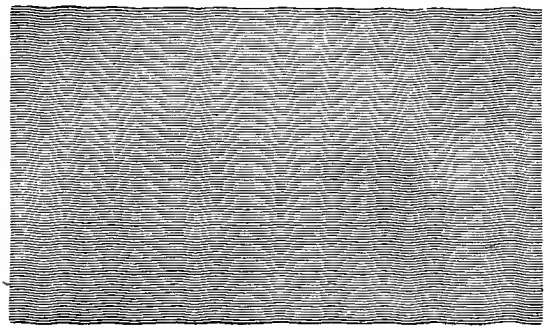


After success is attained in producing plain tints, proceed with graduated tints, which are made by varying the

width of the lines, and their distance from each other. After facility is obtained in straight-line tints, proceed to the study of waved lines. Cut some lines which are slightly waved, as in this example. This kind of line will

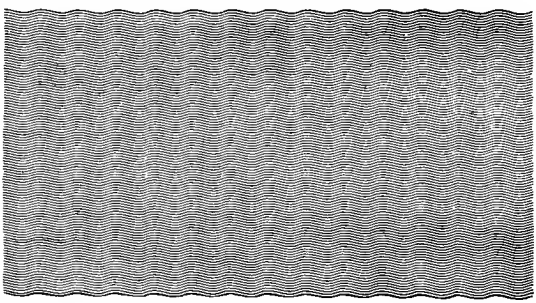


be found very useful in sky-tints. Afterwards cut some with more undulation of line, as in this example. Cut



some lines quite curved, as in the following instance. It should be observed, however, that it is not desirable to cut *masses* of tint with this line; for, "when the alternate

undulations are much curved, the tint, when printed will appear as if intersected from top to bottom, like



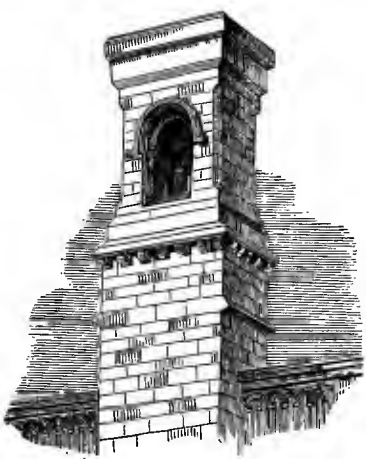
wicker-work, with perpendicular stakes." "This effect will be observable, both in lines cut by hand or by machine."

Examine fine examples of wood engraving, and observe closely the tints, and endeavor to imitate them; and continue the studies of tint-cutting till the pupil can cut tints skilfully. Remember that future success depends upon the manner in which these first lessons are cut. When able to cut tints well, take a small picture which is made principally of tints. In a drawing on wood, the lines to express the given effects are cut according to the judgment of the engraver. In a transfer, all the lines are transferred to the wood just as they are to be cut. Hence transfers, at this stage of the pupil's progress, are most serviceable for practice.

Before commencing to engrave either a drawing or a transfer, the block must be covered with paper (envelope paper is best), to protect the picture from being rubbed

and blurred by the hands while being engraved. A piece of yellow bees-wax will be found most useful in fastening the paper to the block. Make a small opening in the paper, where the engraving is to be commenced. Let it be large enough so that the edges do not shade the lines being cut. Remove it as fast as may be necessary during the process of engraving.

An example like this turret is simple, and useful for practice. First remove the wood around the edges of the tint



with a gouge. With a chisel, cut a thin shaving from the surface of the ends of the lines, so that the ends of the lines will be lower than in the other portions. With the finest tint-tool, cut an outline between the sky-tint and the turret. The term *outline* in wood engraving has two meanings. It refers firstly to the form or boundary lines of all objects in a picture; and, secondly, it indicates the

delicate white line cut around objects, which separates them from surrounding objects and tints. In this example, this white outline is used on each side of the turret, separating it from the sky-tint; on the light side, where the tints on the bricks are stopped by the boundary lines; between the sky and balustrade, and on the upper and under sides of the arcs. This outline is generally so fine that it is not distinctly perceptible in the impressions from the cut, but is necessary to give the requisite relief to the objects, which without it would appear to stick to each other.

The sky-tint is first cut after the outlining, because it is generally better to cut all backgrounds before objects in the foreground.

The tints on the *shaded* side are cut in short lines, stopped by the lines crossing, which indicate the seams in the brick-work. On the light side, some of the bricks are lightly tinted, and others are white. On the tinted bricks, the outline is cut carefully close to the black line, and the tint then cut. To cut the white blocks: with a fine tool cut an outline on each side of the black lines; with a coarser tint-tool, make the outline still wider, and remove the wood within with a small gouge. Be careful that the tool does not rest on the lines, bruising them down, as in printing they will seem to be broken lines. The lines in the window are nearly all cut with the finest tint-tool. The arcs in the balustrade are outlined, as before described, and the tints cut with tools of different sizes. When completed, ink the block, and compare the cut with the impression from which the transfer was made. Dexterously trim any lines which have been left too thick,

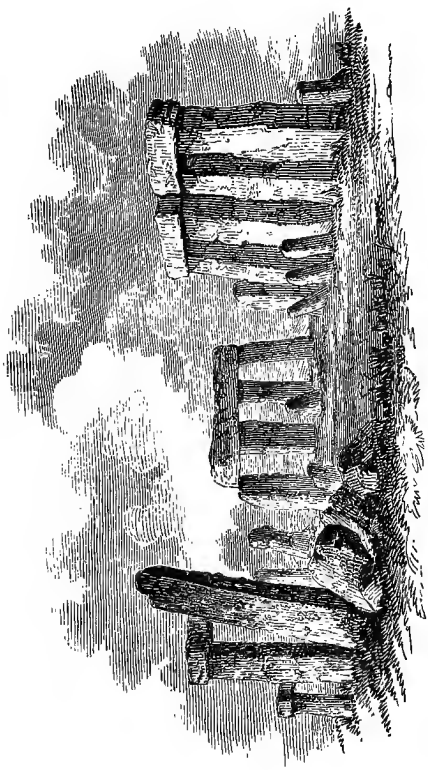
but be careful not to trim too much. The wood engraver can always get the subject *lighter*, but cannot reproduce the black which has been cut away; so care must be observed not to get the subject too light before a proof is taken.

Pictures in outline are those in which the forms of the objects are given without shading. This example of a falcon is in outline. It will be well to take lessons in

cuts of this character, in connection with those that combine tints with form. Great care is necessary, in cutting outline pictures, not to bruise the lines with the tool.

This example, a stonehenge, will bring into use the previous lessons, and introduce some variety. Commence

with cutting around, and lowering the edges of the tint on the outside; cut out the space of white in the centre,



and lower the edges, and outline the stones. It is always best to cut the tints against which an object is placed first. If in this instance the stones were cut first, it would be almost impossible to cut the tint entirely to the black line without breaking through.

The sky in this cut is made of several tints, which are all waved, some slightly, and others much waved. The undulations suggest motion: hence in clouds the lines are usually waved. "Clear blue sky is represented by straight-line tint, either uniform or graduated."

The engraver should remember that with lines must be produced given effects. The lines used must be those which will best suggest the forms and textures of the objects represented, and the relation they bear to each other. "The choice of these tints depends upon taste and judgment; so no specific rules can be laid down to guide in their selection. Lines are not to be introduced merely as such, to display the mechanical skill of the engraver: they ought to be the signs of an artistic meaning, and be judged of accordingly as they serve to express it with feeling and correctness."

In this example, the different tints in the sky suggest different degrees of density of the clouds; and they are separated from each other by white touches, which also indicate the light edge of the clouds.

The stones are represented by broken tints: the series of lines are short, have stops in them, and are crossed by other lines. The lines are none of them perfectly straight, and some are quite waved. This combination of lines suggests the roughness of stone. The ground is cut partly in tint, and partly with indications of grass. And here it may be observed, that objects in the foreground exhibit most fully the characteristics of quality, those in the middle distance less, and those in the background the *least*. So in this example, at the foreground, the markings of

grass are strongly indicated; but, as the ground recedes from the front, the markings are lost in the tint. This suggests the reality of nature; for the student, standing on a lawn or meadow, will observe distinctly the blades of grass immediately at the feet, while those at a distance will appear merged into an indistinct mass of even tint. So with the stones in this example: in those that are nearest the foreground, the markings are bold and decisive; those in the background are in plainer tints. The grass in this example is cut with a lozenge-tool. The pupil will observe that the line taken out varies in width. The graver, from its shape, is adapted to cutting such lines. By different degrees of pressure into the wood, the engraver is enabled to produce differences in the width of the lines, and also to cut them with a freedom and delicacy that is impossible with a tint-tool. This cut of "Finis" is almost

entirely cut with a graver. The work being simple, it is a suitable example for a beginner. Cut a broad outline around the masses of leaves, and remove the wood outside, as has previously been described. The leaves are cut with a small graver. The pupil will observe the variation in the width of the lines cut out, also how the leaves and grass are formed. The narrow rim of tint on the stone may be cut with either a tint-tool or graver. The letters must be

carefully outlined, and the wood between them taken away with either a graver or tint-tool, whichever is most convenient. The blank spaces are removed with a gouge.

Examples like the following will enable the pupil to bring into use the previous lessons. In the first cut, the

sky, the buildings, the water, and the shade on the shore, are all cut with tint-tools of various sizes. The foliage is cut with gravers.

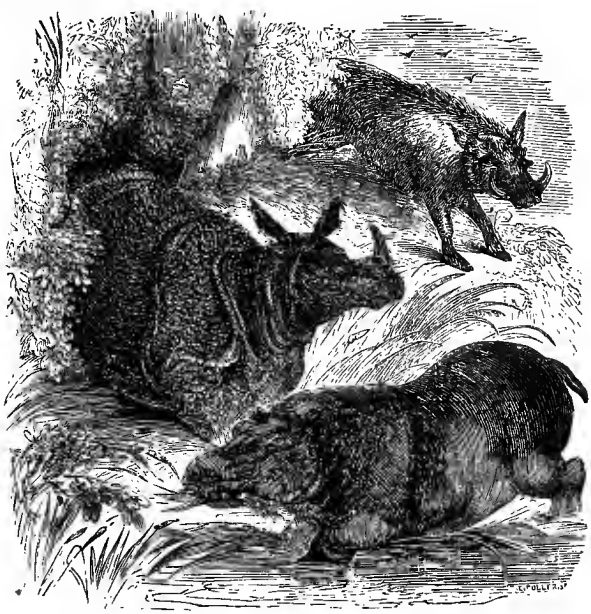
In the second cut, the sky, and most of the tints on the mountains and rocks, are cut with tint-tools. The foliage,

and some of the marking on the rocks, are done with gravers. The pupil will observe also the meanings of the lines which are employed to produce given effects. The skies are cut with delicate lines, and contrasted with the buildings in the one example, and with the rocks in the other, seem to be at a great distance. Distance is thus intimated. On the buildings, in the portions that seem to be nearest, the lines have more strength than in those farther away. The lines on the nearest mountains and rocks have more color and character than on those in the background.

An engraving holds the same relation to a drawing that a translation does to a work in the original. The artist makes a drawing on wood, giving us a picture in the draughtsman language. The engraver takes it, and translates with lines the artist's meaning into an engraving. According to the ability of the engraver, will this translation prove a truthful one, or a mere mechanical performance.

In this example, the lines are almost entirely cut with

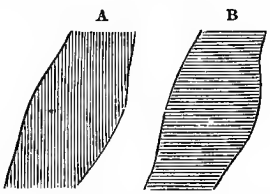
gravers. An outline is cut around the animal. The delicate foliage is cut with a medium-sized graver. The shade on the small tree, and also on the ground, can be cut either with the graver or the tint-tool. At this stage of the pupil's progress, it would be well to cut it with the tint-tool. The lines on the animal are best cut with the graver. In this example, the lines are so chosen and disposed that they show the form of the animal, and also indicate its hairy covering.



The differences between qualities and textures are more fully exhibited in this cut. The wood is removed around the outside, and the edges of the sky and the foliage lowered, in the manner previously described. The foli-

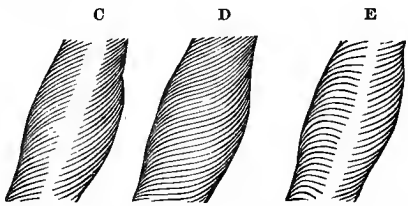
age of the trees, and the reedy grass, are each indicated by lines of different character. The coarse, rough hair of the wart-hog, in the background, is indicated by different lines from those of the sky or foliage or the water; differing also from those which indicate the rough and wrinkled skin of the rhinoceros, or from those which suggest the thick, leathery hide of the hippopotamus. This engraving is partly cut with tint-tools, but mainly with gravers.

With respect to the direction of lines, it ought at all times to be borne in mind by the engraver, that they should be disposed so as to denote the peculiar form of the objects they are intended to represent. For instance, in

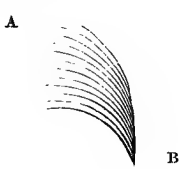


an arm or leg, they ought not to run horizontally or vertically, — conveying the idea of either a flat surface, or of a hard cylindrical form, — but with a gentle curvature suitable to the shape and degree of rotundity required. A well-chosen line makes a great difference in properly representing an object, when compared with one less appropriate, though more delicate. In these five examples, A, B, C, D, E, the outline is the same, and the width of the lines as nearly alike as possible: the differences in the direction of the lines produce the differences in effect observed. "When such curved lines are introduced to repre-

sent the rotundity of a limb, with a break of white in the middle, expressive of its greatest prominence, as is shown in figure C, the lines should be cut as if intended to be continuous, as is seen in figure D: by this means, all risk of their disagreeing, as in figure E, will be avoided. The part which is white in C should, however, be lowered out before the lines are cut.



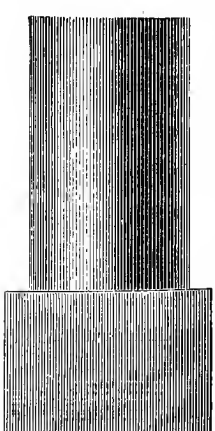
"This disposition of lines will not only express the form required, but also produce more color, as the lines approach each other in approximating curves, as may be observed in the examples above, and thus represent a variety of light and shade, without the necessity of introducing other lines crossing them. In cutting curved lines, considerable difficulty is experienced by not commencing properly. If, in executing a series of such lines as are



shown in this example, the engraver commences at A, and works towards B, the tool will always be apt to cut through the black line already formed; whereas, by commencing at

B, and working towards A, the graver is always outside of the curve, and consequently never touches the lines previously cut. As the drawing is the reverse of the impression, it is necessary to observe that the motion of the graver is from right to left on the blocks; that is, the point B forms the beginning, and not the termination, of the first line when properly commenced." To cut these lines in this manner, it is necessary to place the block upside down. It is always much easier and better to cut curves with the arcs downward, since the tool can be guided easily, leaving good clear lines. When reversed, it is up-hill work, and the lines are ragged.

"This care ought always to be observed when engraving a series of curved lines, as, by holding the block properly, the work is executed with greater freedom and ease; while the inconvenience arising from slips is avoided.



"The rotundity of a column or similar object is represented by means of parallel lines, which are comparatively open in the middle, where light is required, but which are engraved closer and thicker towards the sides, to express shade. The effect of such lines will be rendered more evident by comparing the column with the base, which is represented by a series of equidistant lines."

In almost all illustrations of machinery and mechanical apparatus, the tints are produced

by the use of *straight* lines; hence ability to cut straight-line tint will enable any one to excel in mechanical engraving.

"Clear, unruffled water, and all bright and smooth metallic substances, are best represented by *single* lines; for if cross lines be introduced, except to indicate a strong shadow, it gives to them the appearance of roughness, which is not at all in accordance with the ideas which such substances naturally excite.

"Objects which appear to reflect brilliant flashes of light ought to be carefully dealt with, leaving *plenty of black* as a ground-work; for in wood engravings such lights can only be effectively represented by contrast with deep color.

"Reflected lights are, in general, best represented by single lines running in the direction of the object, with a few touches of white judiciously taken out." Most indications of foliage can best be cut with a graver. In backgrounds, masses of foliage are represented by tints, the lines of which are somewhat curved, and cut in series. Here the tint-tool may be used to advantage. In the middle distance, more expression of character is given.

In the foreground, the indications of character are made angular or rounded, denoting somewhat the form of the leaves. The graver is best adapted to cutting these forms. The markings of character are strongly defined in the light, and delicately so in the shadow. The masses are so disposed, that the whole general effect will give the impression of the kind of foliage delineated.

In the next example, we have a bit of woodland portrayed. By examination, the pupil will detect the means

employed to convey the idea of a real forest, suggest its coolness, and the whispers of its myriads of ever-moving

leaves, — of Nature's countless tongues, revealing her incomprehensible harmonies. It is the aim of all true Art

to represent Nature so as to bring to the mind of the observer all those emotions which the reality would call into existence.

In this example of portraiture, there is a combination of tinting and cross-hatching. Cross-hatching signifies the manner of producing effects by series of lines crossing

each other. In plates, this can be easily done, for the lines are engraved across each other; but in wood engraving, being a reverse process, it is necessary to remove the little white spaces between the lines. This can generally be cut best with a graver. Commence in an angle of the interstice; hold and turn the graver so that the little space of wood may be cleanly cut out, leaving the lines clear and continuous. Sometimes a dot or short line is left within this little square or diamond. It is hardly necessary to state that the wood is cut away around them. Of course, it requires great care to cut cross-hatching finely; but, when it is introduced, it is desirable to do it well, and the engraver should begrudge no pains to acquire facility in its execution. Indeed, throughout all study, the engraver should have a constant appreciation of the maxim, "that what is worth doing at all, is worth doing well." At one time, cross-hatching was much employed in representing flesh, which is now generally cut in tints, with white lines crossing. Cross-hatching is especially adapted to drapery. It is also much employed in cutting fruits, in combination with tints and a kind of stippling. Flowers are usually engraved with delicate tints.

In mechanical cuts, much of the plain lining is frequently done with a ruling machine, which will produce masses of tints in an expeditious and satisfactory manner. The machine is set so as to produce the required tints, the portions of the picture ruled, and then the cuts completed by hand.

In large cuts, required to be done in a given time, it is customary to prepare the boxwood in sections, so that it

may be taken apart after the drawing is made upon it, and each section given to an engraver. For instance, a cut that has twenty-four days' labor upon it may all be done in one day, if subdivided into twenty-four parts, and each part given to an engraver. The different sections are then re-united, and usually an electrotype or stereotype made, from which the printing is done. This method is employed by most illustrated papers that portray the incidents and events belonging to the march of time.

It may not be amiss to say a few words in relation to the stereotype and electrotype processes, by which means a single wood-engraving may be duplicated an indefinite number of times, and each duplicate will allow many thousands of impressions to be taken. For the stereotype, a mould is made in plaster from the cut: melted type-metal is poured into this mould, and, when cool, is removed from the mould a fac-simile of the engraving.

For an electrotype, a mould is made with a preparation of wax and plumbago: this mould is placed in a solution of copper. The wires from an electro-magnetic battery are adjusted in contact with the mould; and the action of the magnetic currents causes the copper to deposit upon the mould, making a copper duplicate of the engraving. The thickness of the sheet of copper depends upon the length of time that the mould remains in the solution subject to the action of the battery. About twelve hours is sufficient, usually. The sheet is quite thin, and is afterwards backed with type-metal, and then mounted upon wood (cherry or mahogany); the whole being the height

of type. An electrotype is considered better than a stereotype for fine engravings, as a sharper and more delicate mould can be made in wax than in plaster, thus rendering the duplicate more perfect. Copper is also more durable than type-metal, and many more impressions may be printed from an electrotype than from a stereotype.

The author has endeavored to make the directions for wood engraving as concise, simple, and practical as possible; with what success, the reader is best able to judge. In conclusion, the author would reiterate the statement, that practice and perseverance, combined with a love of the art, will enable any one to achieve success.

According to the aptness of different persons will be the facility with which they will be enabled to execute good engravings in a longer or shorter time. But genius alone will not be sufficient for the attainment of excellence: there must be also diligent application.

Perfection may never be attained in this life; for to the best engravers there are always higher mounts to ascend: always within, their souls present the cry, "Higher, still higher." Verily, unto each engraver, it is "line upon line, and precept upon precept." Every line made by the hand is traced upon the spirit; and, when a picture has been completed, one invisible to human eyes, an engraving with living lines, has been wrought in a human soul, which, infilled with the Divine Spirit, causes the work of its hand to go forth to other human souls with unutterable power to impress them with its lessons of thought and feeling.

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